

**SCOALA NORMALA SUPERIOARA
BUCURESTI**

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**Courses at the SNSB
Mathematics Department**

Note: IMAR = Institute of Mathematics of the Romanian Academy, Bucharest

The introductory courses are addressed to students in the first two university years of the Bucharest universities. There is no admission and no examination at the end of these courses.

The preliminary cycle is followed by students in the third and fourth university year, who pass an admission contest in order to become students of SNSB. It is complementary to university studies.

The master cycle is a master program equivalent to other universities master.

The optional courses do not count for the student's academic records. They are approved by the Department Director, contrary to the others, approved by vote by the Scientific Council.

The courses held by professors from Romania had 52 hours in the period 2001-2006 and 39 hours beginning October 2006. The courses held by professors outside Romania were usually intensive and had 40 hours in the period 2001-2006 and 24 hours beginning October 2006. The optional courses had usually 52 hours in the period 2001-2006 and 39 hours after October 2006, but there were some courses of 6-12-18 hours.

In order to pass the year, a student in the Preliminary Cycle had to pass:

- 3 exams at Preliminary Cycle or Master Courses between 2001-2004 and 2006-2007
- 2 exams at Preliminary Cycle or Master Courses between 2004-2006

In order to obtain the Master diploma, a student in the Master Cycle had to write a Master thesis and to pass:

- 2 exams at the Master Courses between 2001-2006
- 3 exams at the Master Courses between 2006-2007.

Professor	Course
University year 2001-2002	
The preliminary cycle	
Differential manifolds and maps	Dr. Barbu Berceanu (Senior researcher IMAR)
Homology theory and duality	Dr. Stefan Papadima (Senior researcher IMAR)
Homotopic theory of CW-complexes	Dr. Barbu Berceanu (Senior researcher IMAR)
Riemannian surfaces	Dr. Cristian Anghel (Senior researcher IMAR)
University year 2002-2003	
The preliminary cycle	
Lectures on analytic number theory	Dr. Cristian Cobeli (Senior researcher IMAR)
Introduction to operator theory	Dr. Aurelian Gheondea (Senior researcher IMAR)
Variational calculus on Riemannian manifolds	Conf. Dr. Liviu Ornea (University of Bucharest) and Prof. Dr. Stere Ianus (University of Bucharest)
Wavelets and applications	Prof. Dr. Nicolae Popa (University of Bucharest and Senior researcher IMAR)
Infinite dimensional Lie groups	Dr. Daniel Beltita (Senior researcher IMAR)
Introduction to algebraic K-theory	Dr. Christophe Soule (Senior researcher Institut des Hautes Etudes Scientifiques – France)

Professor	Course
University year 2003-2004	
Introductory Course	
An introduction to the Mathematics of the Nineteenth Century	Dr. Barbu Berceanu (Senior researcher IMAR)
The Preliminary Cycle	
Algebraic topology by examples	Dr. Barbu Berceanu (Senior researcher IMAR)
Additive number theory	Conf. Dr. Alexandru Gica (University of Bucharest)
Topics in Lie theory	Dr. Barbu Berceanu (Senior researcher IMAR)
Enriques classification of (complex) algebraic surfaces	Prof. Dr. Paltin Ionescu (University of Bucharest and Senior researcher IMAR)
Quasiconformal applications, Riemann surfaces and Teichmuler spaces	Prof. Dr. Miodrag Mateljevic (University of Belgrade, Serbia)
Master in Algebra-Geometry-Topology	
Introduction to moduli spaces in complex algebraic geometry	Dr. Vasile Brinzanescu (Senior researcher IMAR)
Fifty years of homological algebra	Dr. Barbu Berceanu (Senior researcher IMAR)
Algebra and combinatorics	Prof. Dr. Dorin Popescu (University of Bucharest and Senior researcher IMAR) and Dr. Cristodor Ionescu (Senior researcher IMAR)
Master in Analysis	
Interpolation theory for linear and nonlinear operators	Prof. Dr. Nicolae Popa (University of Bucharest and Senior researcher IMAR)
Modular theory in operator algebras	Prof. Dr. Serban Stratila (University of Bucharest and Senior researcher IMAR)
Topics in harmonic analysis	Dr. Camil Muscalu (Researcher, Institute of Advances Studies, Princeton, USA)
Introduction to free probability theory	Prof. Dr. Florin Radulescu (University of Iowa, USA)
Optional Courses	
The field \mathbb{C} is algebraically closed	Prof. Dr. Jean-Pierre Serre (College de France)
Weyl Calculus	Prof. Dr. Viorel Iftimie (University of Bucharest)
Analysis on manifolds	Prof. Dr. Serban Stratila (University of Bucharest and Senior researcher IMAR)
Introduction to free probability theory	Prof. Dr. Serban Stratila (University of Bucharest and Senior researcher IMAR)

Professor	Course
University year 2004-2005	
Introductory course	
Nineteenth Century Mathematics- Selected Topics	Dr. Barbu Berceanu (Senior researcher IMAR)
The preliminary cycle	
Vector Bundles and Characteristic Classes	Dr. Barbu Berceanu (Senior researcher IMAR)
Fourier Integral Operators and Weyl-Hörmander-Bony Calculus	Prof. Dr. Viorel Iftimie (University of Bucharest)
Introduction to Several Complex Variables	Dr. Cezar Joita (Senior researcher IMAR)
Semi linear elliptic equations. An introduction	Prof Dr. Petru Mironescu (University of Lyon)
Regularity theory for elliptic equations	Prof. Dr. Laurent Veron (University of Tours)
K-Theory and differential operators	Dr. Sergiu Moroianu (Senior researcher IMAR)
Master in Algebra-Geometry-Topology	
Moduli Spaces of Vector Bundles	Dr. Vasile Brinzanescu (Senior researcher IMAR)
Introduction in Arithmetic Geometry	Lect. Dr. Razvan Litcanu (University of Iasi)
Topics in Combinatorial and Geometric Group Theory	Dr. Barbu Berceanu (Senior researcher IMAR)
Introduction to Morse Theory	Prof. Dr. Dan Burghilea (State University of Ohio)
Homological Methods in Commutative Algebra	Dr. Cristodor Ionescu (Senior researcher IMAR)
Abstract versus Embedded Classification of Complex Projective Manifolds	Prof. Dr. Paltin Ionescu (University of Bucharest)
Optional Courses	
Introduction to the Grothendieck-Teichmuller Theory	Dr. Ivan Marin (University of Evry)

Professor	Course
University year 2005-2006	
Introductory courses	
Nineteenth Century Mathematics- Selected Topics. About numbers and pictures	Prof. Dr. Radu Gologan (Senior Researcher IMAR and "Politehnica" University Bucharest) and Dr. Calin Popescu (IMAR)
Introduction in Mathematical Analysis: The evolution of important notions from the beginnings to our times	Prof. Dr. Nicolae Popa (University of Bucharest and Senior Researcher, IMAR)
The preliminary cycle	
Rational points on Elliptic Curves	Lector Dr. Alexandru Gica (University of Bucharest)
Representation Theory	Dr. Nicolae Manolache (Senior researcher IMAR)
K-theory for C^* -algebras	Prof. Dr. Serban Stratila (University of Bucharest)
Homological algebra and applications I	Dr. Cristodor Ionescu (Senior researcher IMAR)
Introduction to Dynamical Systems	Dr. Eugen Mihailescu (Senior researcher IMAR)
Homological algebra and applications II	Dr. Cristodor Ionescu (Senior researcher IMAR)
Master in Geometry and Topology	
Geometry of Toric Varieties	Dr. Marian Aprodu (Senior researcher IMAR)
Introduction to symplectic geometry	Prof. Dr. Liviu Ornea (University of Bucharest)
Master in Mathematical Physics and Spectral Theory of Quantum Operators	
Quantum Hamiltonians: spectral analysis and asymptotics for the evolution	Dr. Radu Purice (Senior researcher IMAR)
Nonlinear Analysis and Applications in Mathematical Physics	Prof. Dr. Vincentiu Radulescu (University of Craiova)

Professor	Course
University year 2006-2007	
Introductory courses	
Nineteenth Century Mathematics- Selected Topics. About numbers and pictures	Prof. Dr. Radu Gologan (Senior Researcher IMAR and "Politehnica" University Bucharest) and Dr. Calin Popescu (IMAR)
Introduction in Mathematical Analysis: The evolution of important notions from the beginnings to our times	Prof. Dr. Nicolae Popa (University of Bucharest and Senior Researcher, IMAR)
The preliminary cycle	
Quadratic forms according to Gauss	Conf. Dr. Alexandru Gica (University of Bucharest)
Lie Groups and Quantum Physics	Dr. Atle Hahn (University of Bonn)
Topology of Algebraic Plane Curves	Dr. Daniel Matei (Researcher IMAR)
Hyperbolic manifolds in dimensions 2 and 3	Prof. Dr. Jean-Marc Schlenker (University of Toulouse) and Dr. Sergiu Moroianu (Senior researcher IMAR)
The Master Cycle	
Homological methods in algebraic geometry	Dr. Marian Aprodu (Senior researcher IMAR)
Topological degree and fixed point theorems	Prof. Dr. Gheorghe Dinca (University of Bucharest)
Teichmueller spaces and mapping class groups	Dr. Louis Funar (Fourier Institut, Grenoble)
Abelian Varieties	Dr. Nicolae Manolache (Senior researcher IMAR)
Ergodic theory with applications to dynamics	Dr. Eugen Mihailescu (Senior researcher IMAR)
p-adic Numbers and Equations Over Finite Fields	Dr. Tamas Szamuely (Senior researcher, Alfred Renyi Institute of Mathematics, Budapest)
Optional Courses	
Lie Groups and Quantum Physics II	Dr. Atle Hahn (University of Bonn)

Professor	Course
University year 2007-2008	
Introductory courses	
Algebra and Topology	Prof. Dr. Radu Gologan (Senior Researcher IMAR and "Politehnica" University Bucharest) and Dr. Calin Popescu (IMAR)
Analysis	Prof. Dr. Nicolae Popa (University of Bucharest and Senior Researcher, IMAR)
The preliminary cycle	
Elliptic curves	Conf. Dr. Alexandru Gica (University of Bucharest)
Sheaves and cohomology of sheaves	Dr. Cezar Joita (Senior researcher IMAR)
Topology of Algebraic Plane Curves	Dr. Daniel Matei (Researcher IMAR)
The Master Cycle	
Geometry of toric varieties	Dr. Marian Aprodu (Senior researcher IMAR)
Topology and dynamics for hyperbolic maps	Dr. Eugen Mihailescu (Senior researcher IMAR)
Analytic number theory	Dr. Titus Hilberdink (University of Reading)
Complex partial differential equations	Prof. Dr. Heinrich Begehr (Freie Universitaet Berlin)
Introduction to Hodge theory	Dr. Daniel Matei (Senior researcher IMAR)
Free probability	Prof. Dr. Florin Radulescu (Senior researcher IMAR and Universita Roma 2)

Professor	Course
University year 2008-2009	
Introductory courses	
Introduction to the elementary theory of dynamical systems and topology	Prof. Dr. Radu Gologan (Senior Researcher IMAR and "Politehnica" University Bucharest) and Dr. Calin Popescu (IMAR)
Harmonic Analysis	Prof. Dr. Nicolae Popa (University of Bucharest and Senior Researcher, IMAR) and Prof. Dr. Serban Stratila (University of Bucharest and Senior Researcher, IMAR)
The Master Cycle	
Geometry of Hilbert schemes	Dr. Marian Aprodu (Senior researcher IMAR)
Differentiable dynamics	Dr. Eugen Mihailescu (Senior researcher IMAR)
Algebraic Number Theory	Conf. Dr. Alexandru Gica (University of Bucharest)
An introduction to the geometry of stochastic flows	Prof. Dr. Fabrice Baudoin (Universite de Toulouse)
Fiber Bundles and Characteristic Classes	Dr. Dorin Cheptea (Senior researcher IMAR)
Introduction to L-functions and modular forms	Prof. Dr. Alexandru Popa (Holy Cross College)
Evolution equations: dissipation and dispersion	Dr. Liviu Ignat (Senior researcher IMAR)

Professor	Course
University year 2009-2010	
Introductory courses	
Introduction Homological Algebra	Dr. Cristodor Ionescu (IMAR)
Harmonic Analysis	Dr. Cezar Joita (IMAR)
Introduction to Algebraic Topology	Dr. Daniel Matei (IMAR)
Introduction to the study of vector bundles	Conf. Dr. Victor Vuletescu (University of Bucharest)
The Master Cycle	
Quasi-regular Dirichlet Forms	Prof. Dr. Lucian Beznea (IMAR)
Analysis on fractals	Dr. Eugen Mihailescu (Senior researcher IMAR)
Introduction to birational geometry: classification of algebraic surfaces	Prof. Dr. Paltin Ionescu (University of Bucharest)
Riemann surfaces	Dr. Sergiu Moroianu (Senior researcher IMAR)
Topics in Riemannian geometry	Prof. Dr. Liviu Ornea (University of Bucharest)
Wavelets	Prof. Dr. Nicolae Popa (IMAR and University of Bucharest)
Evolution equations	Dr. Liviu Ignat (Senior researcher IMAR)
Brownian Motion, Ito's Calculus and Stochastic Differential Equations	Dr. Ionel Popescu (Senior researcher IMAR)
Optional Courses	
Spectral Theory	Prof. Dr. Bernard Helffer (Univ. Paris Sud)